

ficient generally. An outlet drain should run from the depressions in the road. A drain or culvert crossing the road should be large enough to pass 2 inches of rainfall in one hour when the drainage area is small, 1 inch for a valley two to three miles long, and so on.

All streets and roads should be built higher in the middle than at the sides, and should have gutters deep enough to carry off storm waters, unless there are specially constructed large drains for this purpose (as to which see "Water Sewerage," further on).

**Complete Drainage.**—If such drains (designed to carry off *all* the rain water, slops and waste water that is not absorbed by the ground,) are contemplated, regard must be paid, in laying them, to the future sewerage of the town, even if this is not carried on at the same time as the drainage system proper.

The drainage of large districts, swamp lands, low lands, etc., varies so with the configuration of the ground that it is impossible to give any set of rules that apply in all cases. As a rule, the district is intersected by a number of dykes, often parallel, that drain into larger dykes or streams.

Intercepting dykes are often dug around the whole area to be drained to prevent the access of water from without.

As an illustration, the low "Landes" in France may be given. Here 260,000 acres of the richest lands in France have been reclaimed, chiefly by cutting open canals 16 to 20 feet wide, following the natural slope of the plateau with a fall of 1 to 2 per 1,000. Of these canals 1,600 miles have been completed. For 75 miles along the coast, huge sand-banks protect the country from the sea, the drainage along them being received by a large collecting canal 40 feet wide. The works cost \$1,700,000, about; and the value of the reclaimed land is estimated at upwards of \$56,000,000.

*"The fevers which formerly ravaged the country have disappeared, and the country may now be considered one of the most healthy in France."*